

Kings Curriculum Map

Biology

	Autumn Term	Spring Term	Summer Term
Year 9	<p>Cells Animal and plant cells, specialised cells and differentiation, microscopy and magnification, RP microscopy, exchange surfaces and diffusion</p> <p>Organisation Organisational hierarchy, plant tissues and organs, human digestive system, RP food tests, blood, heart and blood vessels, lungs, health and lifestyle</p> <p>Infection & response Understanding the different causes of illness, bacterial, viral, fungal and protist. Uses and dangers of micro-organisms, how they infect us and how our bodies non-specific defences. Pathogens are microorganisms such as viruses and bacteria that cause infectious diseases in animals and plants. They depend on their host to provide the conditions and nutrients that they need to grow and reproduce. They frequently produce toxins that damage tissues and make us feel ill. This section will explore how we can avoid diseases by reducing contact with them, as well as how the body uses barriers against pathogens.</p>	<p>Bioenergetics In this section we will explore how plants harness the Sun’s energy in photosynthesis in order to make food. This process liberates oxygen which has built up over millions of years in the Earth’s atmosphere. We also investigate how plants use photosynthesis to produce glucose, the chemical reaction and factors affecting the rate of photosynthesis. RP5 investigates the effect of conditions on rate of photosynthesis by measuring the number/volume of oxygen produced in pondweed.</p> <p>Infection & response Interpret data about risk factors for specified diseases. Understand how and why drug are tested and trials are published only after scrutiny by peer review. Recognise, draw and interpret images of cells. Use prefixes milli, micro. Handling a microscope. Observational diagrams of cells, labelling and annotating. Sampling and growth of microbes in culture</p> <p>Bioenergetics Describe how leaf structure and the different tissues play roles in photosynthesis in the plant. Solve simple algebraic chemical equations. (HT) Use data to relate limiting factors to the cost effectiveness of adding heat, light or carbon dioxide to greenhouses. Investigate the effect of light intensity on the rate of</p>	<p>Homeostasis Homeostasis; Sense organs; The Nervous system; The Reflex arc; RP7 Reaction Time; The Human Endocrine System.</p> <p>Inheritance, Variation and Evolution Types of reproduction; DNA structure; The Human Genome; Variation-Voyage on the Beagle; Do tall people have big feet?; Selective breeding; Extinction; Fossils; Classification.</p> <p>Ecology & Biodiversity Competition, Biotic & Abiotic factors, Adaptations, Food chains, Measuring the distribution of organisms (Quadrats & Transects)</p>

		<p>photosynthesis using an aquatic organism such as pondweed.</p>	
<p>Year 10</p>	<p>Cells</p> <p>Eukaryotes and Prokaryotes, magnification-standard form, chromosomes, mitosis and the cell cycle, stem cells, osmosis, RP osmosis, active transport</p> <p>Organisation</p> <p>Enzymes and digestion, factors affecting enzymes-temp/pH, RP enzymes, heart disease, cancer, transpiration</p> <p>Infection & response</p> <p>This section will explore how we can avoid diseases by reducing contact with them, as well as how the body uses barriers against pathogens. Once inside the body our immune system is triggered which is usually strong enough to destroy the pathogen and prevent disease. When at risk from unusual or dangerous diseases our body's natural system can be enhanced by the use of vaccination. Since the 1940s a range of antibiotics have been developed which have proved successful against a number of lethal diseases caused by bacteria. Unfortunately, many groups of bacteria have now become resistant to these antibiotics. The race is now on to develop a new set of antibiotics.</p>	<p>Bioenergetics</p> <p>Both animals and plants use oxygen to oxidise food in a process called aerobic respiration which transfers the energy that the organism needs to perform its functions. Conversely, anaerobic respiration does not require oxygen to transfer energy. During vigorous exercise the human body is unable to supply the cells with sufficient oxygen and it switches to anaerobic respiration. This process will supply energy but also causes the build-up of lactic acid in muscles which causes muscle fatigue. Anaerobic respiration in plants and fungi results in the production of alcohol.</p> <p>Infection & response</p> <p>Evaluate the global use of vaccination in the prevention of disease. How antibiotic resistance in bacteria can occur.</p> <p>Bioenergetics</p> <p>Define the conditions and reactions of aerobic/anaerobic respiration. Solve simple algebraic chemical equations. Investigations into the effect of exercise on the body.</p>	<p>Homeostasis & response</p> <p>The nervous system recap; Synapses; Blood sugar; Diabetes; Reproductive hormones; Contraception; Infertility; Negative feedback.</p> <p>Inheritance, Variation & Evolution</p> <p>Meiosis; Inheritance; Inherited disorders; Genetic engineering; Evolution; Antibiotic resistance and evolution.</p> <p>Ecology</p> <p>Recap of year 9 ecology, Nutrient cycling, Deforestation, Waste management, Global warming, Maintaining Biodiversity.</p>

Year 11	PPE Preparation Initial revision of topics and focus on exam technique.	PPE Analysis Working on areas of weakness as identified by the PPE and more focus on exam and revision techniques	Revision/Exams
Year 12	Biological Molecules Cells	Exchange Genetic information, variation and relationships between organisms	Finishing Exchange and Genetic information topics; Revision; Exams; Preparation for Year 13
Year 13	Energy transfers Organisms and response	Genetics, populations, evolution and ecosystems Control of gene expression	Revision; Exams